Optimization and Management of Naval Hospital Bremerton's Military-Medicare Population by Market Analysis of the Naval Hospital Bremerton Empanelled Population

A Graduate Management Project

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14. ABSTRACT
The purpose of this research project was to determine whether Naval Hospital Bremerton could meet the service demands for the care of the over 65 military-Medicare eligible population within the catchment area. If not, what changes in service could be made to better accommodate Bremertons over 65 beneficiary population without adversely effecting the service to all other beneficiary categories. As a result of this study, several recommendations are forwarded. First, one of the pediatric department provider positions should be terminated and the position should be shifted to the primary care department. Second, all providers in the primary care department should be empanelled. Third, ensure that providers are empanelled in a manner that considers patient acuity and/or provider utilization rates. Fourth, use any additional capacity to first enroll any remaining eligible beneficiaries under 65 that are not currently enrolled. Fifth, allow the staff a grace period. The enrollment of additional military-Medicare beneficiaries should be delayed by at least three months from the expected turn-on date of the Composite Health Care System II. This will give the providers time to become familiar with new systems and practices.

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ABSTRACT

The purpose of this research project was to determine whether Naval Hospital Bremerton could meet the service demands for the care of the over 65 military-Medicare eligible population within the catchment area. If not, what changes in service could be made to better accommodate Bremerton's over 65 beneficiary population without adversely effecting the service to all other beneficiary categories.

Naval Hospital Bremerton currently provides service to approximately 1000 military-Medicare eligible beneficiaries. The study used inpatient and outpatient visit data obtained from various hospital databases to compile demographic information on this population from fiscal year 2000. The data was analyzed using descriptive statistics. This information was then used to make utilization projections that would include the additional 3,615 military-Medicare consumers within the hospital's catchment area.

The study found that the 65 and over beneficiaries currently seen utilize services at a rate 2.4 times that of the 64 and under. Inclusion of the remaining 3,615 patrons would increase their population percentage from 4 to 16. Additionally, over 45% of the military-Medicare population seen have multiple diagnosis and chronic, high cost ailments.

A review of the hospital services reveals that there is a great deal of unused capacity within the hospitals current system. On average, 20% of the hospital's monthly appointments go unfilled. The hospital expects to further increase this capacity by the addition of a new primary care wing which will

offer the providers the efficiency of two examine rooms per doctor. The hospital also expects to improve provider productivity with the addition of the composite health care system II (CHCS II). This system is designed to supply providers with an on screen, computerized version of the health record.

As a result of this study, several recommendations are forwarded. First, one of the pediatric department provider positions should be terminated and the position should be shifted to the primary care department. Second, all providers in the primary care department should be empanelled. Third, ensure that providers are empanelled in a manner that considers patient acuity and/or provider utilization rates. Fourth, use any additional capacity to first enroll any remaining eligible beneficiaries under 65 that are not currently enrolled. Fifth, allow the staff a grace period. The enrollment of additional military-Medicare beneficiaries should be delayed by at least three months from the expected turn-on date of the Composite Health Care System II. This will give the providers time to become familiar with new systems and practices. The delay will also give the command time to more accurately account for changes in capacity caused by the recapture of beneficiaries, the expansion project, and CHCS II.

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Introduction

Conditions which prompted the study

In 1999, the Principal Deputy Assistant Secretary of Defense (Health Affairs), the Director TRICARE Management Activity and the Deputy Surgeons General created the Military Health System Optimization Team (MHSOT). The goal of this team was to create a Military Health System (MHS) plan that would provide its beneficiary population with healthcare in the most efficient and cost effective manner possible. The three major tenets of MHS optimization are: (1) Effective use of readiness-required personnel lists and equipment to support the peacetime health service delivery mission. (2) Equitably align resources to provide as much health service delivery as possible in the most cost effective manner - within the Military Treatment Facility (MTF). (3) Use the best, evidence-based clinical practices and a population health approach to ensure consistently superior quality services (TRICARE, 2000). This concept was further refined by the Department of Defense (DoD). The end product was titled Population Health Improvement (PHI) (TRICARE, 2000). Behavioral guidelines within the PHI concept are designed to account for efficiency limitations inherent in the military system. These guidelines estimate that when items such as administrative duties and military requirements are

considered, caregivers lose approximately ten percent of their functional care delivery time. This estimate is considerably lower than actual field reports (Bremerton, 2000).

The MHS operates as a large Managed Care Organization (MCO). Like any other MCO the MHS relies on its Primary Care Managers (PCMs) to control beneficiary consumption of entity resources. Based on the assumptions within the PHI model, a goal of 1,300 to 1,500 enrollees per PCM was deemed appropriate.

"The leadership at Naval Hospital Bremerton/Fleet Hospital FIVE reviewed these documents, and concluded that the MHS Optimization and PHI plans may not fully consider real-world variables that affect the enrollee per provider goal" (Bremerton, 2000). As a result, Naval Hospital Bremerton assembled a task force to further study the issues addressed within PHI documents. The task force was composed of a diverse combination of clinicians and administrators. They engaged in an in-depth study, designed to identify as many factors affecting provider time as possible. The ultimate goal was to provide a more precise model for the determination of MTF capacity. The Bremerton team concluded that a composite average enrollment capacity of 791 per PCM was a more realistic expectation and that additional increases would require the elimination of the family practice residency program or a reduction in the non-clinical work/requirements (Bremerton, 2000). This was based on a determination that for each civilian Full Time Equivalent (FTE) a military provider could only provide .6 FTEs. While these numbers reflect the affect of many of the internal MHS factors that influence the utilization of resources, it is clear

that there are external forces that can have an equally dramatic impact.

Recently, two legislative initiatives, contained within the National Defense Authorization Act, were enacted that will have great impact on the MHS. The first will remove the co-payment requirements from TRICARE beneficiaries that choose to seek care outside of the MTF. For the first time in history, the MHS will have to directly consider the impact of head-on competition in their decision processes. The second initiative, awards eligibility for TRICARE services to qualified applicants over the age of 65. Because these two events will allow unprecedented consumer choice within the military beneficiary population, the potential for drastic increases in the age, needs and the size of the market could necessitate colossal changes in both the types of product service lines currently offered at Bremerton Naval Hospital and the utilization rates of those resources. To this point, projections of service have been based on the resources that the MTF could supply, with little emphasis on the population's resource demands. In order to provide the appropriate products and services, it is necessary to have an understanding of the demographics of the population served. "Continuous data collection and dissemination informs and educates decision makers about the patterns of change" (Berry & Parasuraman, 1997, p. 65).

Goal Statement

Naval Hospital Bremerton has a TRICARE enrollment of 23,884 empanelled, excluding the Everett Prism area. In addition, over 900 Medicare eligible consumers are allowed to access the system

for the benefit of the family practice residency program. This accounts for a 64% market share in the Bremerton catchment area. Naval Hospital Bremerton's goal is to recapture approximately "10,000 TRICARE eligible beneficiaries over a 24-month period" (T. Roberts, personal conversation, 08 Aug 00). Eligible beneficiaries within the catchment area include active duty military personnel, dependents, retirees and their dependents under the age of 65, not eligible for Medicare. Not included in these numbers are an additional 3,615 Medicare eligible consumers that have already initiated inquiries as to when they can begin receiving care based on the provisions within the most recent version of the Defense Appropriations Act. Although the potential population increase of this group represents a one-time event, the potential impact on Naval Hospital Bremerton must be assessed to estimate the impact on resource utilization.

Research Questions

Do the product lines provided by Bremerton Naval Hospitals current operations adequately address the needs of the over 65 military-Medicare population it currently serves? What are the specific demographic characteristics of that population? What modifications to the current product line are required? If additional Medicare eligible beneficiaries are empanelled, will there be an impact on utilization?

Literature Review

Marketing

Marketing's job is to convert societal needs into opportunities (Kotler, 1995). Contrary to popular belief,

marketing is not selling. Marketing is a complex management process which includes research, segmentation, targeting, positioning, marketing mix, implementation, and control. "An important first step in becoming a customer-focused organization is to do a good job of segmenting consumers and determining the needs and desires of each group of customers" (Brown, 1996, p. 59). Researching and segmenting the market allows an opportunity to identify buyer needs and interests that a company may satisfy at a profit, or in the case of the MHS system, identify the best utilization of assets. Researching can also allow the MHS to anticipate changes in the beneficiary population needs and pre-position itself to effectively meet those needs.

Marketing Mix

"In order to operate in today's changing environment, health care managers need a method for scanning external information that will affect the organization" (Ginter, Swayne, & Duncan, 1998, p. 21). Marketing mix refers to the ability of the MHS to develop a product line that can address the defined resource needs of the various sectors of the market that it targets. Once the resource needs have been identified, actions must be taken to ensure implementation in the product line. Additionally, the product lines should be reviewed periodically to ensure compliance with the requirements established through continual market analyses.

This type of activity loosely describes some of the tenant concepts of process improvement. As the MHS continues its journey towards health care optimization, implementation of

quality improvement initiatives will become an integral component of that development. The recent MHS movement towards utilization of the Malcolm Baldrige criteria further signifies this philosophy. The Malcolm Baldrige program attempts to identify the best business practices in use so that everyone can benefit from them. A key component of the Baldrige criteria deals exclusively with patient market knowledge. The Baldrige criteria graded section poses the question, "How do you determine and/or project key health care service features and their relative importance/value… for purposes of current and future marketing, health care service planning, and other business developments, as appropriate?" (Baldrige, 2000, p. 17).

Managerial Epidemiology

In attempt to forecast the future behavior of a population, one useful technique is to research its past activity. "Epidemiology, or population research, is concerned with the distribution and determinants of health, diseases, and injuries in a human population" (Sultz & Young, 1999, p. 358). The data obtained in this form of research can be applied to different population projections to model the affects. One such study was performed in the United Kingdom. "Assuming no change in the age and sex specific arthroplasty rates, the estimated number of hip replacements will increase by 40% over the next 30 year period because of demographic change alone" (Birrell, Johnell, & Silman, 1999, p. 569). This study is highly suggestive of the type of impact that demographic changes can have on resource consumption and openly points towards the need to forecast demand.

Change Management

Change represents one of the few constants within the healthcare arena. When possible, every organization should attempt to plan for change. "An organization's success or failure is essentially due to the things that its employees do or fail to do" (Robbins, 1998, p. 629). This makes management of the behavioral changes within the organization paramount. Economic and social trends represent just a few of the forces that have dramatically influenced the health service field. Those responsible for managing change should attempt to monitor the forces that dictate a need for change. "Change agents are those responsible for managing change activities within an organization" (Robbins, 1998, p. 629). This definition would include CEOs, managers, supervisors and anyone else with the ability to oversee changes in an organization. Change agents should formulate contingency plans before external pressures necessitate the need for adjustments. Some of the most important external pressures will include:

Changing demographic characteristics of the population of elderly persons needing services, greater sophistication of the general public and consumers of health services in terms of their demands on the system, and rapidly developing medical technologies and proliferation of increasing specialized services (Shortell, Kaluzny, 1994).

Most employees have a tendency to be resistant to change. "Changes substitute ambiguity and uncertainty for the known" (Robbins, 1998, p. 633). Timely information dissemination throughout the organization can remove this barrier. If an

organization's strategic plans reasonably define the stratagem for change, the organization's ability to transition is greatly enhanced.

Forecasting

"Because all management decisions must deal with future events, the use of forecasts is essential" (Griffith, 1995, p. 400). By its design, queuing theory is geared for use in forecasting and epidemiology. Queuing theory relies on "the analysis of historic data to provide optimal service while minimizing waiting, it is an objective method of determining staffing needs during any time period" (Tucker, Barone, Cecere, Blabey, & Rha, 1999, p. 71). This mathematical model has been used to answer many questions. Whenever more than one user demands a limited resource, a line or queue forms. This model allows us to determine the optimal staffing to meet that need or at a minimum the consequence of a high demand on a limited resource. Teams must solve operational problems in the future environment, not the present one (Griffith, 1995).

Primary Care Portals

Primary care has assumed the most vital role in the viability of any managed care organization. MCOs throughout the country are shifting towards a primary care management focal point. Within that focus, "…providing cost-effective care to a large population of patients, requires primary emphasis on and commitment to, prevention and health maintenance" (Frazier, Hyman, & Altschuler, 1998, p. 798). It is through these portals that the consumer gains access to services. "The goal of structuring care around one primary care physician who provides

the majority of visits for each patient may not be attainable without limiting access to care in some way" (Yano, et. al., 1995, p. 1160). Furthermore, the efficiency with which these services are provided will dramatically impact the facilities utilization of resources, and thus its capability to serve its population. "Economic care aims to be efficient and to avoid using services that are not pertinent to a patient's clinical situation or that are more costly than alternative services for the same purpose" (Yano, et. al., 1995, p. 1161). Primary care focuses on a variety of outpatient services that include pediatrics, immunizations, physical exams, obstetrics, geriatrics, family practice, and preventive medicine. "Effective cost control begins with programs to reduce illness and the need for health care" (Griffith, 1995, p. 20).

While family practice, women's wellness, pediatrics, and internal medicine are defined as primary care within the Bremerton Naval Hospital system: it is necessary to determine the appropriate mix of services. "It is estimated that only 15% of pediatric admissions require pediatric specialist management. . . " (Frazier, Hyman, & Altschuler, 1998, p. 798). Not only should the hospital know how many providers it needs, the enterprise should be able to determine the specific types of practitioners it desires. Such determinations are necessary for both fiscal responsibility and the provision of quality medical care. The cost of non-primary care professional services will be substantially greater than the cost of primary care services, often between 1.5 and 2.0 times higher ((Frazier, Hyman, & Altschuler, 1998). This example emphasizes the need for

management to incorporate population knowledge into the decision processes of the resource structure.

MHS Aging Care History

Until recently, the MHS has been afforded the luxury of transferring the full responsibility for care of its military retirees, their spouses and survivors to Medicare on the 65th birth of the individual. In many cases where space and finances permit, MTFs service this population for both the enhancements of staff training and ethical considerations. Unfortunately, the amount of care offered was constrained in part because the MHS system was not allowed to receive any financial reimbursement from the Health Care Financing Administration (HCFA). The primary cause of these financial roadblocks are Medicare rules, regulations and laws written in the 60's prohibiting military hospitals and staff from treating patients 65 and over who are eligible for Medicare (Posehn, 1997).

As part of the Balanced Budget Act signed in 1997, Congress authorized a test program, which allowed the MHS to receive reimbursements for services rendered to the 65 and over population. This project became known as the Medicare subvention program. The goal of the project is to determine if the MHS has the capability to provide HCFA with a cost-effective alternative for providing care to Military-Medicare beneficiaries (HCFA, 1999). This test program allowed a limited number of 65 and over beneficiaries at eight selected sites to use MTFs as their primary source of care.

On 30 October 2000, former President Clinton signed

legislation to expand the health care benefits of the military-Medicare population. "The new benefits include coverage under TRICARE, the military's health care program, and pharmacy coverage (DefenseLink, 2000)." Although this program is designed to use TRICARE as a second payer to Medicare, members will also be entitled to any benefits that are not covered under Medicare but offered by TRICARE. The intent of this program is to keep the target population from having significant out of pocket expenses. It has been assumed that if this population can receive care with their current providers, without co-payments, migration to local MTFs would not occur. Unfortunately, this comes at a time when the recent focus of the MHS has been the recapturing of its other outsourced populations. The onset of bid price adjustments, within the latest TRICARE contracts, rewards MTFs for their ability to provide beneficiaries in-house services. The result of these changes, whether ideal or not, will be an influx of military-Medicare patients to MTFs. "In some cities, doctors frustrated with what they say are low Medicare payments and onerous rules are limiting the number of Medicare patients they take – or refusing to accept Medicare patients at all" (Appleby, 2001, p. A1).

General Population Information

It is generally noted that the elderly have more contacts with medical providers than do the non-elderly. According to the Health United States, 1999 With Health and Aging Chartbook, In 1994-96 persons 65 years of age and over had an average of 11.4 contacts per year with a physician or a physician extender. That number decreases by more than five contacts per year in the next

age group, 45 to 64. It was also noted that females in the 65 and over age category exhibited higher provider contact rates, while whites in general had a average contact rate 1.2 times less than that of non-whites (Health United States, 1999). Whites between the ages of 65 and 74 had a mean contact rate of 9.25. The national white population average is 82%, while the average within the Bremerton catchment area is 89.1% (Quickfacts, 1999). The realization that whites utilize medical resources at a lower rate than their non-white counterparts makes this a vital planning factor. No matter what the ethnic background, by 1997, 79% of Americans over 70 years of age had at least one of a list of seven chronic diseases requiring care (Health United States, 1999). Chronic disease is one of the key components in the evaluation of the resource consumption of elderly patients. "It is estimated that 80% of a health plan's medical costs are related to the care of chronic conditions" (Cherry, Colliflower, Tsiperfal, 2000, p. 192).

Time

One of the resource elements associated with morbidity is time. It is reasonable to assume that the greater the number of ailments a patient has, the more time they will need with a provider. One study of patients diagnosed with diabetes revealed that patients spent an average of 25 minutes of face-to-face time with the physician (Barnes, Edwards, Hodo, Walker, Doyle, 2000). Additional complaints could cause a provider to spend the better part of an hour with one patient.

Current healthcare trends have caused the component of time management to lose some of its importance. In a fee for service

environment, providers were reimbursed for the time that they spent with patients. This was beneficial to patients with co-morbidity because the providers were not penalized for the amount of time spent with patients. In the managed care setting, prospective payment arrangements made seeing or spending time with patients a disincentive. As the amount of time providers spend with patients shrink, patient care and quality of services are compromised. "In this connection, the finding by Tamblyn and coworkers, published in this issues, showed that shorter office visits were associated with more inappropriate prescribing of non-steroidal anti-inflammatory drugs (NSAIDs)" (Davidoff, 1997, p. 483). The article found that shorter visits lead to provider failure to obtain history that would have been beneficial in the prescribing patterns for patients.

Today, very little research is available on the amount of time providers spend with patients. In order to make accurate assessments for appointment templates, understanding how each provider's appointment time is consumed is paramount. Current Procedural Terminology (CPT) coding is used for outpatient billing and provides a ready means for accounting for provider appointment time. The American Medical Association (AMA) publishes the CPT codebook annually. The element of time is factored into the evaluation and management (EM) service guidelines section. EM/CPT codes focus on three major areas: history, examination, and medical decision-making. The time allotted to a provider is based on the complexity of the visit. "It should be recognized that the specific times expressed in the visit code descriptors are averages, and therefore represent

a range of times which may be higher or lower depending on actual clinical circumstances (AMA, 2000, p. 3).

Methods and Procedures

Demand Forecast

The information management department was utilized to extrapolate diagnostic data, from both the ambulatory database system (ADS) and the composite healthcare system (CHCS), by both demographic category and diagnosis related groups (DRGs). These systems are used to compile and store data on patients seen in outpatient and inpatient settings respectively. Data from fiscal year 2000 was used to provide a descriptive analysis of the types of services received within the military-Medicare eligible category. The descriptive information from the currently served military-Medicare population was analyzed for time on the basis of CPT coding information. The usage of EM/CPT coding allows us to account for patient history, case complexity and decision making within its time element. This information will be used to assign appropriate weights to the population visits by percentage. It will be assumed that all of the additional care recipients must be treated as new patients initially. The adjusted numbers will be used to project expected changes in utilization of hospital services by the anticipated change in the military-Medicare eligible population, as a result of recent legislation. This information will then be contrasted with Naval Hospital Bremerton's appointment templates to determine if the hospital has the ability to meet this change in demand.

Ethical Concerns

All patient-identifying fields were removed from the patient level data that was obtained from the hospital databases. Naval Hospital Bremerton's participation in this project was voluntary.

Reliability and Validity

Consultation with Management Information Department revealed some concerns with data reliability. "Reliability is the accuracy or precision of a measuring instrument" (Kerlinger, 1986, p. 405)". In the case of the ADS system, numerous individuals are involved with the coding process. This raises questions about the consistency of the data. Additionally, there are some concerns about the completeness of data based on differences in departmental procedures. The study addresses this issue through the use of large data sets.

Validity refers to the ability of the measurement tool to measure what you think you are measuring. On face validity, based on the literature review it seems reasonable to assume that the population demographics will influence the utilization of resources.

Results

The data pulled from CHCS, the primary care management office database (PICMO), and the all region server bridge (ARSBridge) system produced 6,504 military-Medicare outpatient visits over a fiscal year. The ARSBridge system was designed to replace the corporate executive information system (CEIS). The purpose of the system is to provide the capacity to more effectively retrieve regional data from existing databases.

Table 1 provides both the military-Medicare and the total catchments population numbers for fiscal year 2000. The numbers within the table reflect the military-Medicare population that is currently empanelled to the Naval Hospital. According to information available through the ARSBridge, the actual catchment population is 4,606.

Table 1. NAVAL HOSPITAL BREMERTON'S MILITARY-MEDICARE POPULATION

Month	Total 65+	F/P 65+	I/M 65+	Total Population	Population Minus 65+
Oct-99	940	594	346	23,600	22,660
Nov-99	998	646	352	23,673	22,675
Dec-99	986	628	358	23,963	22,977
Jan-00	995	628	367	24,050	23,055
Feb-00	1,002	628	374	24,318	23,316
Mar-00	1,004	628	376	24,668	23,664
Apr-00	1,011	628	383	24,276	23,265
May-00	1,012	628	384	24,184	23,172
Jun-00	1,018	628	390	24,215	23,197
Jul-00	992	599	393	24,673	23,681
Aug-00	964	564	400	24,918	23,954
Sep-00	974	564	410	24,987	24,013
Mean	991	614	378	24,294	23,302
ST Dev	22.5	27.0	19.5	448.1	447.9

Table 2 uses the mean population data to compute utilization rates based on the total kept visits. It also shows the total population utilization rate (including telephone consults).

Table 2. NAVAL HOSPITAL BREMERTON'S MEAN UTILIZATION RATES

	Total	F/P Share	I/M Share	With 65+ P/Cons	Minus 65+ P/Cons
Total visits	6,504	4,109	2,367	103,562	97,058
Monthly Mean Population	991	614	378	24,294	23,302
Utilization Rates	6.6	6.7	6.3	4.3	4.2

While military-Medicare only accounted for 4.08% of the catchment population, this population utilized 8.49% of the total visits.

Chart 1 provides a graphic display of the utilization of all Naval Hospital Bremerton appointments. Note that in no month are all of the allotted appointments utilized. The least number of unused appointments in any month of the last fiscal year was 2359; this represents 18.4% of the total available. Table 3 provides further descriptive information on total hospital appointments.

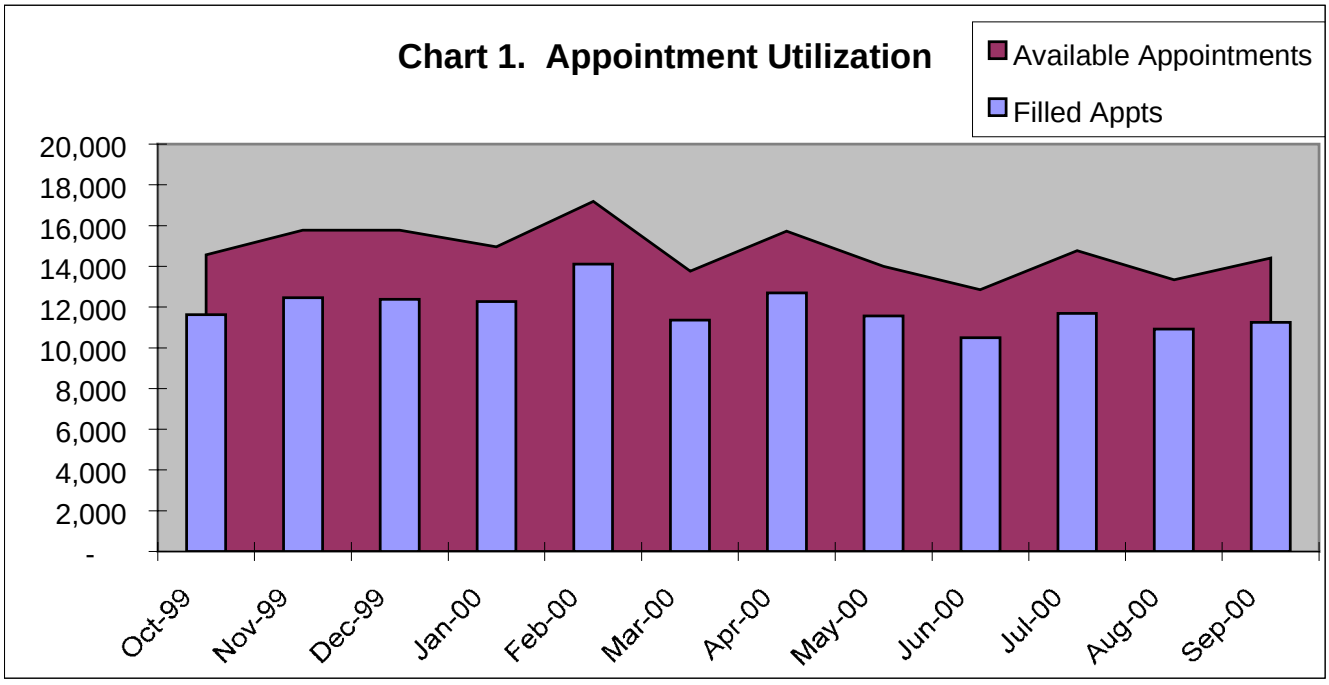


Table 3. Naval Hospital Appointments				
Month	All Appts	All Filled Appts	All Unfilled	% Unfilled
Oct-99	14,563	11,629	2,934	20%
Nov-99	15,773	12,468	3,305	21%
Dec-99	15,766	12,380	3,386	21%
Jan-00	14,949	12,269	2,680	18%
Feb-00	17,182	14,093	3,089	18%
Mar-00	13,761	11,359	2,402	17%
Apr-00	15,730	12,704	3,026	19%
May-00	14,002	11,557	2,445	17%
Jun-00	12,853	10,494	2,359	18%
Jul-00	14,758	11,685	3,073	21%
Aug-00	13,346	10,929	2,417	18%
Sep-00	14,407	11,239	3,168	22%
Mean	14,758	11,901	2,857	N/A
Stdeviation	1215.5	955.0	376.8	N/A

Table 4 provides descriptive information on the unfilled appointments within the clinics defined as the primary entry portals. The proper usage of these portals will determine how efficiently and effectively the majority of the other hospital resources are utilized.

Table 4. Unfilled Appointments in Primary Portals								
Month	**FP Unfilled**	**FP %**	**IM Unfilled**	**IM %**	**Peds Unfilled**	**Peds %**	**WW Unfilled**	**WW %**
Oct	169	4.6%	243	29.9%	393	23.3%	13	2.8%
Nov	268	6.8%	101	19.2%	299	18.2%	31	5.0%
Dec	407	9.1%	232	31.6%	250	15.9%	54	8.7%
Jan	272	6.3%	196	26.7%	223	14.0%	67	9.9%
Feb	286	6.2%	304	32.7%	375	19.3%	50	6.4%
Mar	176	4.7%	116	21.4%	307	18.3%	45	7.5%
Apr	368	8.2%	320	39.2%	301	17.3%	53	8.0%
May	239	6.7%	280	34.0%	338	20.6%	20	3.4%
Jun	486	11.4%	269	39.7%	156	12.8%	31	5.3%
Jul	544	12.4%	228	32.3%	187	13.4%	247	25.3%
Aug	262	7.4%	258	35.3%	388	22.4%	128	17.1%
Sep	332	8.4%	236	29.3%	866	39.3%	22	4.2%
N/A	Mean 317.4	Mean 7.7%	Mean 231.9	30.9%	Mean 340.3	19.6%	Mean 63.4	8.6%
N/A	STD 110.8	STD 2.3%	STD 64.1	6.0%	STD 174.7	6.8%	STD 62.5	6.2%

Tables 5 and 6 illustrate the actual utilization of time by CPT code for fiscal year 2000. The charts are divided to demonstrate the difference between resource demands of new patient and established patients. There were 166 visits coded as new patients within the primary care portals. While this number only accounts for 3% of the 5495 visits that were actually coded, it accounts for more than 6% of the time utilized.

Table 5. New Patient CPT Code Times			
Patient Visits	**Patient %**	**CPT Code**	**Time Allotted**
22	13%	99201	10 Min
30	18%	99202	20 Min
44	27%	99203	30 Min
37	22%	99204	45 Min
32	19%	99205	60 Min

Table 6. Established Patient CPT Code Times			
Patient Visits	**Patient %**	**CPT Code**	**Time Allotted**
804	15%	99211	5 Min
852	16%	99212	10 Min
2540	48%	99213	15 Min
807	15%	99214	25 Min
327	6%	99215	40 Min

CHCS was also able to capture diagnosis data on the target group. While chart 2 gives an indication of patients seen with multiple ailments, Tables 7 and 8 provide the most prevalent outpatient DRG information for both male and females.

Chart 2. Percent of Military-Medicare Patients Based on Number of Recorded Diagnoses

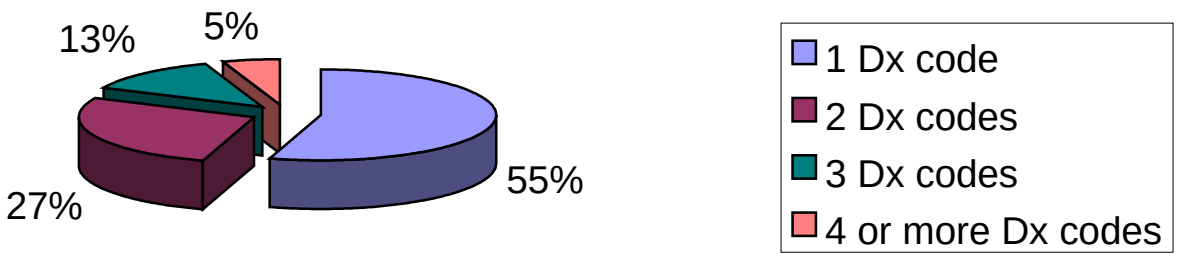
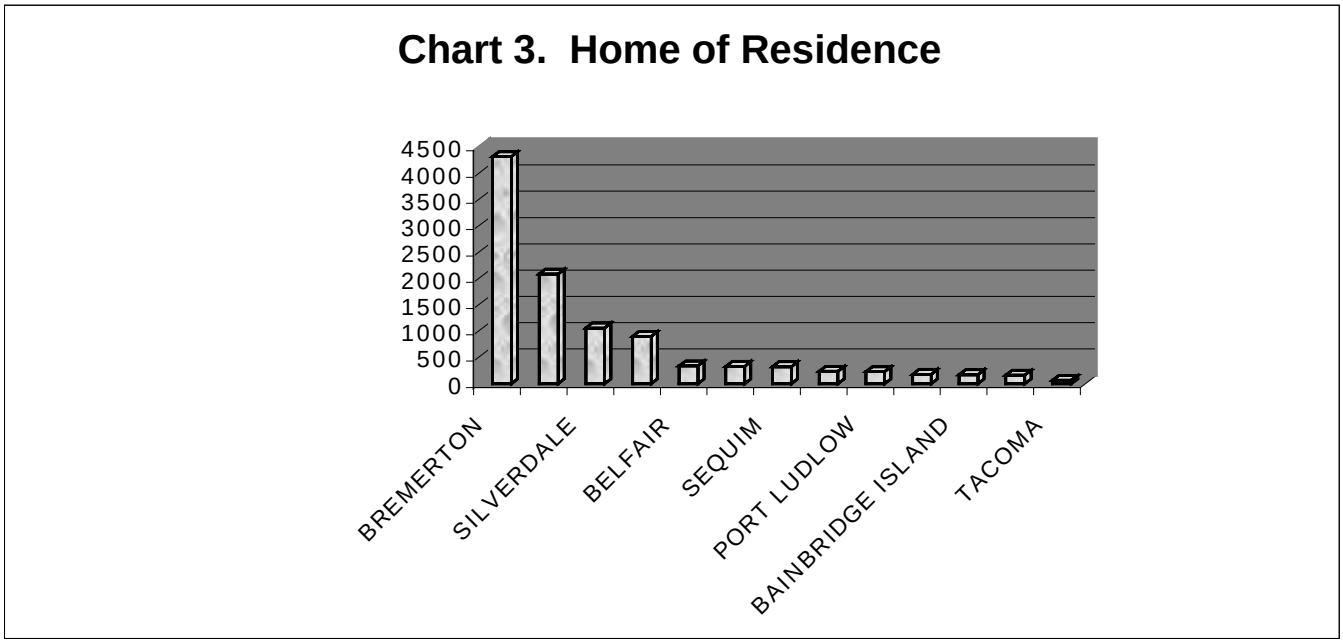


Table 7. Top Ten Diagnosis Related Group (DRG) for Males	Male
BENIGN HYPERTENSION	667
LONG-TERM USE OF ANTICOAGULANT	436
HYPERLIPIDEMIA NEC NOS	350
DIABETES MELLIUS WO COMPLIC	309
OTH SPECFD COUNSELING	253
ASCVD	144
ATRIAL FIBRILLATION	134
CHR AIRWAY OBSTRUCT NEC	118
ROUTINE GENERAL MEDICAL EXAMIN	104
HYPERPLASIA OF PROSTATE	100

Table 8. Top Ten Diagnosis Related Group (DRG) for Females	Female
BENIGN HYPERTENSION	822
HYPERLIPIDEMIA NEC NOS	327
OTH SPECFD COUNSELING	302
DIABETES MELLIUS WO COMPLIC	292
LONG-TERM USE OF ANTICOAGULANT	229
HYPOTHYROIDISM NOS	143
ATRIAL FIBRILLATION	121
ESOPHAGEAL REFLUX	120
ISSUE OF REPEAT PRESCRIPTIONS	117
ROUTINE GENERAL MEDICAL EXAMIN	103

Chart 3 gives an indication of the geographic locations of the military-Medicare population served during fiscal year 2000. It is important to note that the residency information provided was based on the demographics obtained from the ADS information.



Equally note worthy is the fact that there are elderly consumers willing to bypass the services offered at Madigan Army Medical Center (MAMC) in Tacoma and travel an additional hour to receive care in Bremerton.

The average military-Medicare Naval Hospital enrolled population of 991 netted 257 inpatients visits. This number accounts for 7.8% of the 3,277 inpatient visits. Tables 9 and 10 begin the summary of inpatient data.

Table 9. 65+ Inpatient Population Age/2000

	Female	Male	Total Pop
Mean	75.7	75.5	75.6
Standard Deviation	3.1	6.8	5.1

Table 10. 65+ Inpatient Bed Days/2000			
	Female	Male	Grand Total
Mean	3.4	3.3	3.3
Standard Deviation	3.3	2.9	3.2

The military-Medicare community accounted for 877 total bed days during the fiscal year. While the hospital average of 3.2841 compares favorably with the national average of 6.8 and the regional average of 4.5 (Health United States, 1999), that figure accounts for 11.1419% of the total bed days provided by the hospital.

Table 11. Top Ten Male Inpatient Diagnosis	
DX DISCRIPTION	MALE
ESSENTIAL HYPERTENSION, NOS Total	5
UNSPECIFIED CHEST PAIN	5
CHRONIC AIRWAYS OBSTRUCTION, NEC Total	5
PERSONAL HISTORY OF MALIGNANT NEOPLASM OF PROSTATE Total	4
OTHER AND UNSPECIFIED HYPERLIPIDEMIA Total	4
HYPERPLASIA OF PROSTATE	3
ATRIAL FIBRILLATION	3
PNEUMONIA, ORGANISM UNSPECIFIED	3
ACUTE BUT ILL-DEFINED CEREBROVASCULAR DISEASE	3
CONGESTIVE HEART FAILURE	3

Table 12. Top Ten Female Inpatient Diagnosis

DX DISCRIPTION	FEMALE
ESSENTIAL HYPERTENSION, NOS Total	9
UNSPECIFIED CHEST PAIN	8
PNEUMONIA, ORGANISM UNSPECIFIED	6
CONGESTIVE HEART FAILURE	5
UNSPECIFIED ACQUIRED HYPOTHYROIDISM	4
ABDOMINAL PAIN, UNSPECIFIED SITE	3
HEMORRHAGE OF GASTROINTESTINAL TRACT, UNSPECIFIED	3
OTHER CHEST PAIN	3
PURE HYPERCHOLESTEROLEMIA Total	3
ANEMIA, UNSPECIFIED	3

Discussion

In recent years, the President, the Congress and the line community have shown increasing interest in the Military Health System. Concerns have been raised on everything from quality of life to financial viability. No matter what the degree of interest, each stakeholder agrees that the MHS system must operate in an efficient manner. Additionally, as the MHS is forced to recognize the effects of market forces and direct competition, appropriate use of limited resources will become paramount. These factors have forced the MHS to initiate a comprehensive review of its business practices and models for healthcare delivery.

As policies continue to evolve, the MHS faces an environment with two important hurdles; no co-payment for utilization of network services and military-Medicare eligible populations

demanding more and more access to MHS services. In order to effectively serve this population, the MHS will have to make educated forecast about the stresses this population will place on the current system. As we quickly approach the day that the military-Medicare beneficiary gains increased access to the system studies, that project resource needs will be increasingly valuable. This study begins with a descriptive analysis of Naval Hospital Bremerton's military-Medicare population, its inpatient and outpatient appointment schedules and population demographics.

The military-Medicare population average currently enrolled to the Naval hospital is 991, as shown in table 1. If the 3,615 additional eligible members were allowed to enroll, the military-Medicare population would jump from 4% to 16.5%; a four fold increase. Because the elderly historically suffer from chronic ailments and have higher utilization rates, this virtually guarantees an increase in the demand for services. Based on the calculated total mean utilization rate of 6.6 visits per person in table 2, the addition of the remaining 3615 eligible recipients would require 23,725 supplementary appointments per year.

In order for these factors to provide functional information additional adjustments were necessary. Table 13 applies the new patient visit proportions from table 5 to calculate time projections for additional new patient visits. Since the additional population base is already known, this time estimate is based on the assumption that each patient will have an initial visit of greater duration than each subsequent visit.

Table 13. New Patient Appointment Time Projections			
Patient %	**Appt Portion**	**Time Allotted**	**Total Time**
13%	**482**	**10**	**4,820**
18%	**657**	**20**	**13,145**
27%	**964**	**30**	**28,920**
22%	**811**	**45**	**36,479**
19%	**701**	**60**	**42,065**
Totals	**3,615**	**N/A**	**125,430**

Table 14 calculates the time for the remaining visits based on the established patient visitation times in table 6. It should be noted that these projection are reliant on Naval Hospital Bremerton's ability to provide continuity of care. If the patient base is unable to access their assigned providers, additional time must be allotted for each appointment.

Table 14. Established Patient Appointment Time Projections			
Patient %	**EM/CPT Code Totals**	**Time Allotted**	**Total Time**
15%	**3,033**	**5**	**15,166**
16%	**3,215**	**10**	**32,147**
48%	**9,584**	**15**	**143,758**
15%	**3,045**	**25**	**76,124**
6%	**1,234**	**40**	**49,353**
Totals	**20,111**	**N/A**	**316,548**

The combined adjusted appointment time totals 441,978 minutes or 7,377.3 additional provider hours. The primary care portal appointments at the hospital are allotted in 15 and 30-minute blocks. In the best case scenario, if the 7353 unused appointments (see table 4) in family practice, woman's wellness, and internal medicine were counted as 30-minute appointments, they would provide an additional 220,590 minutes of appointment time. This number falls 221,388 minutes short of the projected need. Table 4 also provides data that illustrates an availability of over 4000 unused pediatric appointments, annually. The unused pediatric appointments could translate to an additional 122,490 minutes of primary care, or 2,042 provider hours. This action would reduce the appointment time deficit to 98,898 minutes. With the use of 30-minute appointment slots, the remaining deficiency would be slashed to approximately 3,297 visits annually or 275 visits per month.

Tables 7, 8, and chart 2 are used to demonstrate the need to account for patient acuity. Many of the patients within the military-Medicare population suffer from chronic conditions that require a high degree of maintenance. Many of the top ten DRGs for male and female meet that criterion. Additionally, 45% of those seen in fiscal year 2000 presented with multiple system problems. Currently the Naval Hospital assigns patients to providers without regard to patient acuity or provider utilization (personal interview, Desiderion David, January 3, 2001). This has lead to an inefficient use of resources. Some providers are overworked, while others are under utilized.

Furthermore, an examination of the primary care appointment templates revealed that one contract provider has been assigned to see all acute patients. During high volume periods, this provider's appointments would fill up quickly. In periods of low acute patient demand many acute appointment slots would go unfilled. This provider was not empanelled and had an average of 20% unfilled appointments per month, compared to the 6% average for the rest of the staff (personal interview, Roy Lockwood, January 5, 2001).

While inpatient data compares favorably with national statistics, its reliance on effective outpatient care delivery cannot be overlooked. The Naval Hospital Bremerton has shown an ability to manage its inpatient population well. This is evidenced by the below average bed day count as shown in table 8. The mean population of 991 produced 257 inpatient visits for a utilization rate of 0.2593 for fiscal year 2000. When this rate is multiplied against the potential remaining user population of 3615 it produces an additional 937 inpatient visits a year. While this number may not seem ominous, if it is again multiplied by the bed day mean of 3.28, we end up with an additional 3073 days. When you consider the type of intensive services required for the top chronic diagnosis that the military-Medicare patient population experiences (Tables 11 and 12), the cost of such care can quickly drain both financial resources and manpower.

Limiting the number of military-Medicare eligible beneficiaries that can be empanelled to the hospital must also be considered. Based on the same criteria used in tables 13 and

14 if the hospital were to cap it's Medicare eligible empanelment at 2,000, the net result would be 224,560 or 7,485 30 min appointments per year. As these numbers indicate, this population adjustment would effectively cut the demand for appointment time by half. While limiting the empanelment size is not the most attractive choice, it should be pointed out that those beneficiaries that not empanelled are still able to receive care with their current health care providers. Moreover, other means are now available for the effective management of MHS beneficiaries.

The most positive factor in dealing with the potential increases in the inpatient service demand is the MHS shift to a population health approach. Many of the chronic conditions previously noted can be managed in an outpatient setting. If managed effectively, many inpatient visits can be avoided. The use of services such as disease management clinics and clinical practice guidelines can be used to decrease the need for resource intensive interventions. Additionally, the effective use of health care promotions and ancillary staff support can greatly enhance provider efficiency. Again, these facts presuppose a high level of continuity in the care of the population.

Conclusions and Recommendations

The Naval Hospital at Bremerton is facing the challenge of providing health care to a category of military-Medicare beneficiaries whose numbers are increasing. This comes at a time when the MHS is the process of shifting its philosophy towards population health and toward the recapture of outsourced

patrons. “Moral hazard” implies that the less cost associated with a good or service, the more of that good or service demanded. As co-payments are dropped and the concept of “moral hazard” becomes an issue, the hospital will be forced to compete for the patronage of its most cost efficient consumers. Moreover, as the military-Medicare group gains greater access to the system, Naval Hospital Bremerton will need to develop an understanding of the needs of this population and how it will effect daily operations. The newly acquired pharmacy benefits provide an example of this impact. The first three weeks of the new 65 and over pharmacy benefits provided an additional 4 million dollars of service consumption by this population in Bremerton (personal interview, Peter O’Connor, April 26, 2001).

The intent of this study was to begin to provide a description of the military-Medicare population within the Bremerton catchment area; to provide projections of the service demands of that population and to determine if the Naval hospital’s products and services should be altered to meet that need.

The descriptive analysis of this study revealed several important issues. First, military-Medicare population currently receiving services at the hospital accounts for 4% of the enrolled population and 12% of the workload in patient visits and bed days. Enrollment of the remaining 3,615 would boost the population share above 16%. Second, the military-Medicare group currently receiving care utilizes services at a rate 2.4 times greater than the rest of the hospital’s enrollees. Third, most of the ailments listed in the top ten DRG categories for this

group are chronic in nature and require intensive resource usage. Fourth, many of those eligible for care are willing to travel long distances to receive medical care at Naval Hospital Bremerton (see Figure 3).

Currently, Naval Hospital Bremerton has unused capacity. The hospital's fiscal year 2000 data reveals a monthly average of 2,857 unused appointments. The hospital defines it primary portals to care as pediatrics, women's wellness, internal medicine and family practice. The information contained in Table 4 reveals that the pediatric department averages an unfilled appointment rate nearly 20%. Based on a 30-minute appointment slot the unfilled pediatric appointments accounted for 36% of the total primary portal excess capacity. Family practice had a mean unused appointment rate of 7.69%. The family practice department also produced an outlier whose appointments consistently ran in the range of 20% unfilled.

These facts clearly show the necessity for careful monitoring and analysis of the EM/CPT coding information and other time elements affecting patient visits.

Based on the previously stated findings, the following actions are strongly recommended.

1) Relocate one of the pediatric department positions to family practice.

2) Ensure that all of the providers within the family practice department are empanelled.

3) Ensure that providers are empanelled in a manner that considers patient acuity and/or provider utilization rates.

4) Use any additional capacity to first enroll any remaining

eligible beneficiaries under 65 that are not currently enrolled.

5) Allow the staff a grace period of at least three months from the turnover of the new facility and the activation of CHCS II to become familiar with new routines and procedures. This will also allow the hospital time to begin to establish baselines for tracking efficiencies in a new environment. Only then should the hospital begin to accept an additional load of Medicare eligible beneficiaries.

It should again be noted that this study made the assumption that at some point the entire military-Medicare population would be enrolled. Some of that population may in fact choose other avenues of care. The numbers in the study should be recalculated at a later point if it is shown that the enrolled population is less than anticipated.

The study also relies on the hospital's ability to improve continuity of care. An improvement in the primary portal continuity would allow providers to become more familiar with the history of their assigned population. This would ultimately decrease the amount of time providers spend obtaining patient histories during visits and thus increase efficiency. Continuity increases can be achieved by monitoring the individual provider utilization rates on a quarterly basis. Providers with lower rates should be empanelled new beneficiaries ahead of providers whose patient complexities force them to have higher rates. In order to ensure that providers are not penalized for being efficient, all providers should be encouraged to adopt the best practices of the most efficient providers.

The hospital has made the assumption that the addition of a

new wing, increased support staff and the upgraded CHCS II system will improve efficiency and thus add to capacity. However, the learning curve must be taken into account. Whenever new systems and/or processes are established, there is usually a drop off in productivity while the staff attempts to adapt to the new environment.

Enhancements that would improve future use of this study would be the inclusion of continuity data. Because continuity of care plays such a critical role in the need for patient history, and thus time, the ability to monitor this facet of care would greatly improve the predictive ability of the next study. Additionally, consideration should be given to the impact of the addition of specialty clinics and ancillary services in future studies.

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